

## CLAIMS

1. A method of monitoring live electrical equipment at high or medium voltage, the method comprising the following steps:

5       - illuminating a zone of the equipment in radio energy close to a point where a physical parameter is to be monitored;

10       - re-emitting the received wave with amplitude-modulation responsive to a digital signal related to said physical parameter; and

      receiving the retransmitted wave outside the equipment and demodulating it to obtain a signal related to said parameter.

2. A method of monitoring live electrical equipment at high or medium voltage, the method comprising the following steps:

15       - illuminating a zone of the equipment in radio energy close to a point where a physical parameter is to be monitored;

20       - re-emitting the received wave with amplitude-modulation responsive to said physical parameter crossing a threshold at said point; and

25       - receiving the retransmitted wave outside the equipment and demodulating it to obtain a signal indicative of said threshold being crossed.

3. A method according to claim 1 or claim 2, in which said physical parameter is temperature.

4. An apparatus for monitoring live electrical equipment at high or medium voltage, the apparatus comprising:

30       - at least one sensor unit placed on the equipment, comprising a first radio antenna, a sensor for producing a digital signal related to a determined physical parameter at a point to be monitored, and amplitude-modulation means connected to the sensor and to the first  
35       antenna, and activated by the energy received by said antenna;

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5           - the first antenna retransmitting towards the  
second antenna the radio wave that has been transmitted  
thereby, while simultaneously amplitude-modulating it in  
response to the output signal of the sensor, said  
processing means being arranged to provide a signal  
0   related to said parameter.

- at least one sensor unit placed on the equipment, comprising a first radio antenna, a two-state sensor responsive to a determined physical parameter at a point to be monitored, the sensor changing state when said parameter crosses a threshold, and amplitude-modulation means connected to the sensor and to the first antenna, and activated by the energy received by said antenna;

5        - the first antenna retransmitting towards the second antenna the radio wave that has been transmitted thereby, while simultaneously amplitude-modulating it in response to the state of the sensor, said processing means being arranged to provide a signal  $\text{sgn}(12)$  indicative of the state of the sensor.

6. An apparatus according to claim 5, in which at least two sensor units are provided on the equipment, each sensor unit being arranged to receive the wave transmitted by the second antenna and to retransmit an amplitude-modulated wave to the second antenna, the modulation being a function of the state of the sensor and of identity information, the processing means of the

transceiver unit being arranged to deliver said signals with information identifying the respective sensor units.

7. An apparatus according to claim 6, in which said parameter is temperature.

5 8. An apparatus according to claim 7, in which at least one sensor unit is provided in which the sensor is responsive to a second physical parameter crossing a threshold at the same point on the equipment.

10 9. An apparatus according to claim 8, in which the second physical parameter is current.

10. An apparatus for monitoring high or medium voltage electrical equipment such as a three-phase distribution bay, the apparatus comprising:

15 - at least one sensor unit per phase, the unit being placed on a live element of the equipment and comprising a first radio antenna, a two-state sensor responsive to temperature at a point of said conductor, the sensor changing state when the temperature crosses a threshold, and amplitude-modulation means connected to the sensor  
20 and to the first antenna, and activated by the energy received by said first antenna;

25 - a transceiver unit placed outside the equipment and having a second radio antenna for illuminating the first antenna, a power supply source, and signal processing means connected to the second antenna; and

30 - the first antenna retransmitting to the second antenna the radio wave transmitted by the second antenna together with amplitude-modulation in response to the state of the sensor and to information identifying the sensor, said processing means being arranged to supply, for each sensor unit, a signal  $sgn(12)$  indicative of the state of the sensor together with associated identity information  $Id(12)$ .

35 11. An apparatus according to claim 10, in which at least two sensor units are provided having respective sensors responsive to temperature at the same point, said sensors changing state on crossing different thresholds.

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12. Apparatus according to claim 10, in which a plurality of sensor units are provided in which the respective sensors are responsive to temperature at different points.

5 13. An apparatus according to claim 10, in which at least one sensor unit is provided in which the sensor is responsive to a second physical parameter other than temperature.

10 14. An apparatus according to claim 13, in which said second physical parameter is the current in said conductor.

15 15. An apparatus according to claim 13, in which the sensors are responsive respectively to the value of the temperature and to the value of said second parameter at the same point.

20 16. An apparatus according to claim 10, in which the temperature sensor comprises a temperature switch mounted on said live element, and a circuit connected to the first antenna and including a contact which changes state when the temperature crosses said threshold.

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